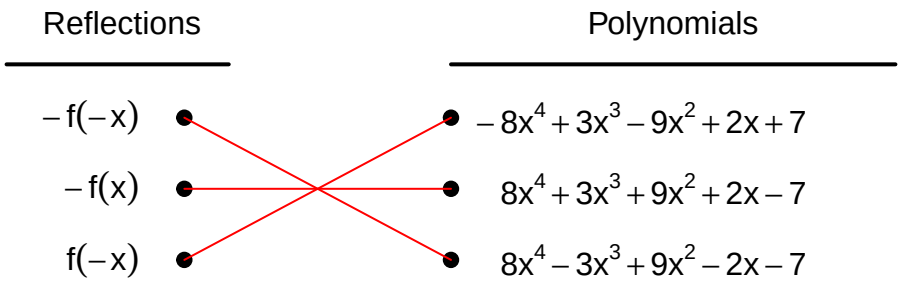
Name: Date:

Exam: Function Reflections (Solution version 15)

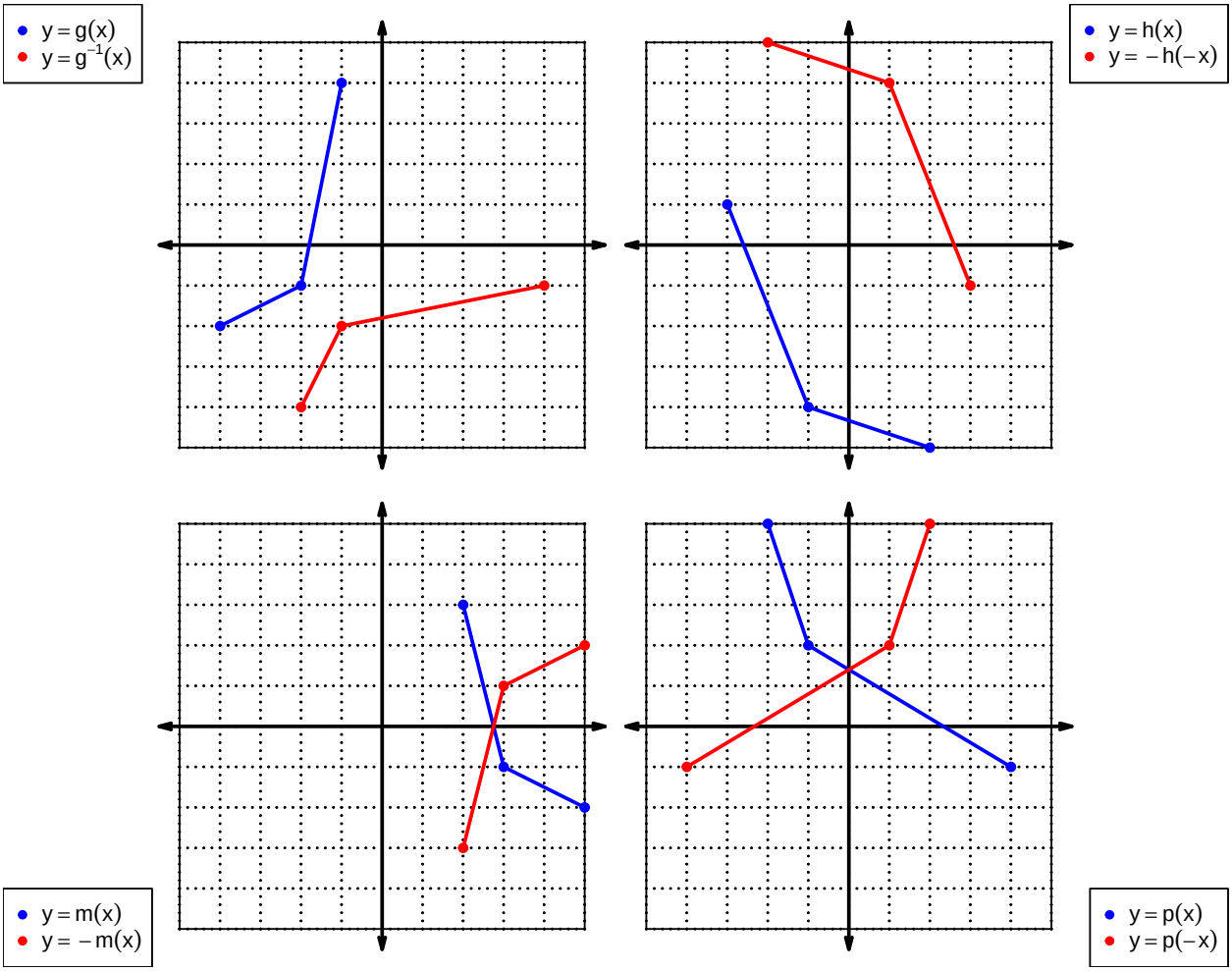
1. Let function f be defined by the polynomial below:

$$f(x) = -8x^4 - 3x^3 - 9x^2 - 2x + 7$$

Draw lines that match each function reflection with its polynomial:



2. In each xy plane shown below, a function is graphed with blue. Draw the indicated reflections (as a second curve, indicated in legend) with black (or with whatever you have). The x axis is horizontal and the y axis is vertical (as typical), and the scale is equal on both axes.



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For all questions on this page, the functions f, g, and h are defined by the table below.

x	$f(x)$	$g(x)$	$h(x)$
1	8	7	6
2	3	1	4
3	6	9	7
4	7	5	3
5	1	3	9
6	9	4	8
7	4	2	5
8	5	6	2
9	2	8	1

3. Evaluate $f(6)$.

$$f(6) = 9$$

4. Evaluate $g^{-1}(7)$.

$$g^{-1}(7) = 1$$

5. Assuming h is an **odd** function, evaluate $h(-3)$.

If function h is odd, then

$$h(-3) = -7$$

6. Assuming g is an **even** function, evaluate $g(-8)$.

If function g is even, then

$$g(-8) = 6$$

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7. A function, f, is **even** if $f(x) = f(-x)$ for all x in the domain. A function, g, is **odd** if $g(x) = -g(-x)$ for all x in the domain.
   Let polynomial p be defined with the following equation:

$$p(x) = -x^3 + 1$$

   a. Express $p(-x)$ as a polynomial in standard form.

$$p(-x) = -(-x)^3 + 1$$
$$p(-x) = x^3 + 1$$

   b. Express $-p(-x)$ as a polynomial in standard form.

$$-p(-x) = -\left(x^3 + 1\right)$$
$$-p(-x) = -x^3 - 1$$

   c. Is polynomial p even, odd, or neither?

neither

   d. Explain how you know the answer to part c.

We see that $p(x)$ is not equivalent to either $p(-x)$ or $-p(-x)$, so p is neither even nor odd.

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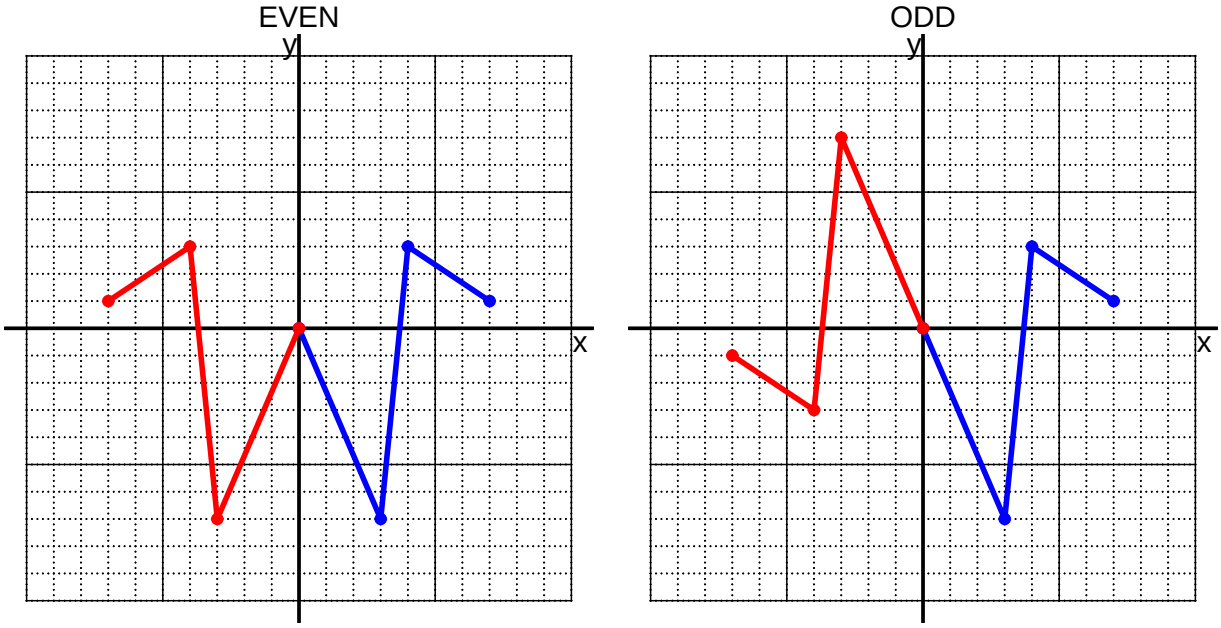
8. I have drawn half of a function. Draw the other half to make it even or odd.



9. Let function f be defined with the equation below.

$$f(x) = \frac{x+6}{2}$$

a. Evaluate $f(8)$.

step 1: add 6
step 2: divide by 2

$$f(8) = \frac{(8)+6}{2}$$
$$f(8) = 7$$

b. Evaluate $f^{-1}(35)$.

step 1: multiply by 2
step 2: subtract 6

$$f^{-1}(x) = 2x - 6$$
$$f^{-1}(35) = 2(35) - 6$$
$$f^{-1}(35) = 64$$

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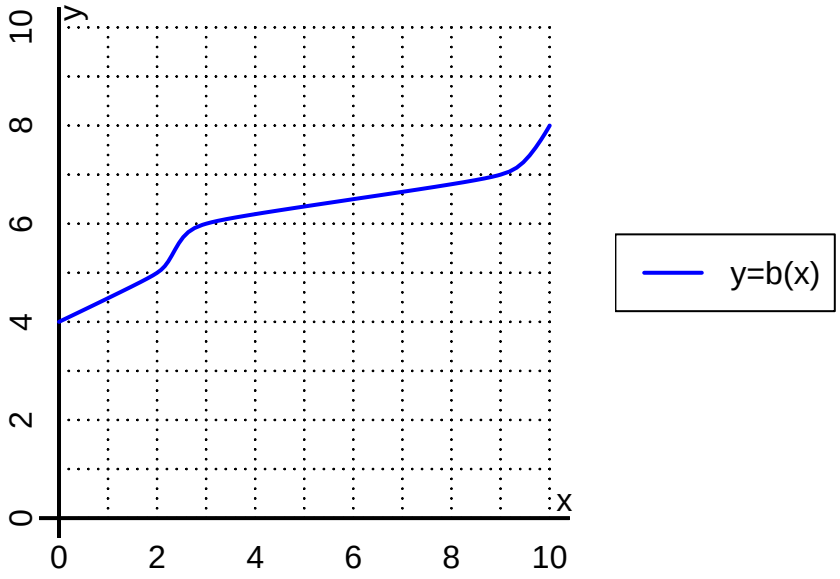
10. The function b is represented by the curve $y = b(x)$ graphed below.



a. Evaluate $b(2)$.

$b(2) = 5$

b. Evaluate $b^{-1}(6)$.

$b^{-1}(6) = 3$

Exam: Function Reflections (Solution version 15)

11. Function f is defined by the table below.

    a. Complete the columns for $-f(x)$ and $f(-x)$ and $-f(-x)$.

x	$f(x)$	$-f(x)$	$f(-x)$	$-f(-x)$
-2	-3	3	-3	3
-1	5	-5	5	-5
0	0	0	0	0
1	5	-5	5	-5
2	-3	3	-3	3

b. Is function f even, odd, or neither?

even

c. How do you know the answer to part b?

Function f is even because column $f(-x)$ matches column $f(x)$ exactly.